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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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MICHAEL BEST & FRIEDRICH LLP 100 EAST WISCONSIN AVENUE MILWAUKEE, WI 53202			HANAN, DEVIN J	
			ART UNIT	PAPER NUMBER
			3745	

DATE MAILED: 05/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/764,283

Applicant(s)

CHAPMAN, THOMAS R.

Examiner

Devin Hanan

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) 35 and 36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) 34 is/are allowed.
- 6) ☐ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) 31-33 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 January 2004 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>6/3/2004</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-33, drawn to the apparatus of a centrifugal blower, classified in class 415, subclass 206.
- II. Claims 35-36 drawn to a method of manufacturing a one-piece fan, classified in class 264, subclass 328.1.

The inventions are distinct, each from the other because:

Inventions of a method of Group II and an apparatus of Group II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case of the product of Group I, Group I can be manufactured by a process different from the process of Group II. An example of an alternate process of manufacturing would be casting.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification and the searches required for Group I and Group II are not coextensive, restriction for examination purposes as indicated is proper.

During a telephone conversation with David Price on 4/19/2005 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-34.

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Affirmation of this election must be made by applicant in replying to this Office action.

Claims 35-36 are withdrawn from further consideration by the examiner, 37

CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 25/9 and 26/9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The applicant claims the first or second shrouds are non-rotating in claims 25 or 26, but then state, in claims 9, both the first and second shrouds are fixed to the blades. Correction is requested.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6, 8-14, 19, 20, 22, 23, 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dybvig (U.S. Patent 3,224,079) in view of Kun (U.S. Patent 4,904,158).

Dybvig discloses a centrifugal fan with

a hub (56) adapted for rotation about a central axis (axis is shown thru hub);
a first plurality of blades (10) arranged about the central axis, wherein each of the blades defines

a leading edge (10b);

a trailing edge (10a);

a first side edge (between leading edge and trailing edge not in contact with the hub) extending between the leading edge and the trailing edge, the first side edge being swept from the leading edge in a direction axially away from the leading edge and radially outward toward the trailing edge;

a second side edge (between leading edge and trailing edge in contact with the hub) extending between the leading edge and the trailing edge, a portion of the second side edge integral with at least a portion of the hub, the second side edge being swept from the leading edge in a direction axially away from the leading edge and radially outward toward the trailing edge;

an inlet radius defined as an outermost radius of the blade leading edge (corner of first side edge and leading edge);

a shroud (30) integral with at least a portion of one of the first and second side edges of the first plurality of blades;

an intermediate radius defined as an innermost radius of the shroud (30);

the first plane extending through the blade and tangent to a cylinder which extends through the blade and is centered along the central axis, the cylinder (52) being of a radius greater than a hub radius and less than the inlet radius; and

the second plane extending through the blade and tangent to a cylinder (12) which extends through the blade and is centered along the central axis, the cylinder being of a radius greater than the intermediate radius.

Regarding claim 4, Dybvig discloses a centrifugal fan with a first shroud (30) fixed to at least a portion of the respective first side edges of the first plurality of blades for rotation therewith, the first shroud shaped to follow at least a portion of a contour of the respective first side edges of the first plurality of blades (figure 2).

Regarding claim 6, Dybvig discloses a first shroud with a cylindrical portion (38).

Regarding claim 8, Dybvig discloses a second shroud (52) integral to at least a portion of the respective second side edges of the first plurality of blades for rotation therewith, the second shroud shaped to follow at least a portion of a contour of the respective second side edges of the first plurality of blades (figure 2).

Regarding claim 9, Dybvig discloses a first shroud (30) fixed to at least a portion of the respective first side edges of at least some of the first plurality of blades for rotation therewith, the first shroud shaped to follow at least a portion of a contour of the respective first side edges of the first plurality of blades (figure 2).

Regarding claim 10, Dybvig discloses a second shroud (52) fixed to at least a portion of the respective second side edges of at least some of the first plurality of blades for rotation therewith, the second shroud shaped to follow at least a portion of a contour of the respective second side edges of the first plurality of blades (figure 2).

Regarding claim 14, Dybvig discloses a second shroud integral with at least a portion of the second side edge of the first plurality of blades.

Dybvig does not disclose curvature in the first plane, a lack curvature in the second plane, leading edges perpendicular to the central axis, and trailing edges parallel to the central axis.

However, Kun teaches curvature in a first plane and no curvature in the second plane.

Regarding claim 2, Kun teaches of leading edges of blades that are substantially perpendicular to the central axis.

Regarding claim 3, Kun discloses the trailing edges of blades that are substantially parallel to the central axis.

Since Dybvig and Kun are from the same field of endeavor, centrifugal fluid movement art, the blade shape of Kun would have been recognized in the pertinent art of Dybvig.

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the blades of Dybvig to include curvature in a first plane, no curvature in a second plane, leading edges that are substantially perpendicular to the central axis and trailing edges that are substantially parallel to the central axis as taught by Kun in order to reduce cavitation and increase the turbine work expansion efficiency (col. 1 lines 48-64).

Regarding claim 5 or 13, Dybvig does not disclose a second plurality of blades (arranged about the central axis, for claim 5) with the first shroud is integral with the

second plurality of blades, the second plurality of blades having no curvature in a plane extending through the blades and tangent to a cylinder which extends through the blades and is centered along the central axis.

However, Kun teaches of a second plurality of blades arranged about the central axis, wherein the first shroud is integral with the second plurality of blades, the second plurality of blades having no curvature in a plane extending through the blades and tangent to a cylinder which extends through the blades and is centered along the central axis for the purpose of doubling the number of blades to reduce the loading on each.

Regarding claim 11 and 12, Dybvig does not disclose a second shroud is integral with a second plurality of blades, the second plurality of blades having no curvature in a plane extending through the blades and tangent to a cylinder which extends through the blades and is centered along the central axis.

However, Kun teaches of a second shroud, integral with a second plurality of blades, the second plurality of blades having no curvature in a plane extending through the blades and tangent to a cylinder that extends through the blades and is centered along the central axis for the purpose of doubling the number of blades to reduce the loading on each (col. 4 lines 1-7).

Since Dybvig and Kun are from the same field of endeavor, centrifugal fluid movement art, the design of Kun would have been recognized in the pertinent art of Dybvig.

It would have been obvious at the time the invention was made to one of ordinary skill in the art to add the additional blades of Kun to either shroud of the fan of Dybvig in order to double the number of blades and reduce the loading on each (col. 4 lines 1-7).

Regarding claims 19, 20, 22 and 23, Dybvig does not disclose a skewed or raked leading edge.

However, Kun teaches of a skewed or raked leading edge (5) for reasons of efficiency (col. 1 lines 24-37).

Since Dybvig and Kun are from the same field of endeavor, centrifugal fluid movement art, the blade shape of Kun would have been recognized in the pertinent art of Dybvig.

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the blades of Dybvig with the blade shape of Kun for reasons of efficiency (col. 1 lines 24-37).

Claims 7, 21 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dybvig in view of Kun as applied to claim 6 above, and further in view of Maumus et al. (U.S. Patent 6,168,734).

Dybvig in view of Kun teaches the construction of a centrifugal blower having all of the recited elements except the following.

Regarding claim 7, the modified Dybvig apparatus does not disclose a cylindrical portion of the first shroud extends upstream of an intersection of the leading edge of the blade and the first side edge of the blade.

Regarding claims 21 and 24, the modified Dybvig apparatus does not disclose a skewed or raked leading edge.

However, Maumus et al teaches of a cylindrical portion of the first shroud extends upstream of an intersection (where 41 and 10 meet) of the leading edge of the blade and the first side edge of the blade and has a skewed or raked leading edge (col. 4, lines 53-67).

Since Dybvig and Maumus et al. are from the same field of endeavor, centrifugal fluid movement art, the design of Maumus et al. would have been recognized in the pertinent art of Dybvig.

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the blades of Dybvig by extending the cylindrical portion of the first shroud upstream of the intersection of the leading edge of the blade and the first side edge of the blade and to provide a skewed or raised leading edge as taught by Maumus et al. for the purpose of more ease in assembly of the impeller.

Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dybvig in view of Kun as applied to claims 1, 2, or 4 above, and further in view of Botros (U.S. Patent 6,168,734).

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Dybvig in view of Kun teach the construction of a centrifugal blower having all of the recited elements except the following.

Dybvig, as modified by Kun, does not teach of making the fan of plastic injection molding.

However, Botros teaches of making centrifugal fans of plastic injection molding.

Since Botros and Dybvig are from the same field of endeavor centrifugal fluid movement, the process of Botros would have been recognized in the pertinent art of Dybvig (col. 1 lines 20-22).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to make the centrifugal fluid movement device by plastic injection molding to reduce manufacturing costs (col. 1 lines 20-22).

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dybvig in view of Kun taken with Maumus et al. as applied to claim 7 above, and further in view of Botros.

Dybvig in view of Kun taken with Maumus et al. teach the construction of a centrifugal blower having all of the recited elements except the following.

Dybvig, as modified by Kun taken with Maumus et al., does not teach of making the fan of plastic injection molding.

However, Botros teaches of making centrifugal fans of plastic injection molding.

Since Botros and Dybvig are from the same field of endeavor centrifugal fluid movement, the process of Botros would have been recognized in the pertinent art of Dybvig (col. 1 lines 20-22).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to make the centrifugal fluid movement device by plastic injection molding to reduce manufacturing costs (col. 1 lines 20-22).

Claim 26, 28–30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dybvig in view of Kun taken with Maumus et al. and Botros as applied to claims 1-24 above, and further in view of Parisi et al. (U.S. Patent 6,224,335).

Dybvig in view of Kun taken with Botros and Maumus et al. teach the construction of a centrifugal blower having all of the recited elements except the following.

Regarding claim 26, Dybvig, as modified, does not disclose a second non-rotating shroud in a closely-spaced, facing relationship with at least a portion of the respective second side edges of the plurality of blades and shaped to follow at least a portion of a contour of the respective second side edges of the plurality of blades, the second non-rotating shroud positioned coaxial with the hub (figure 2).

Regarding claim 28, Dybvig, as modified, does not disclose a second non-rotating shroud has curvature in a plane that contains the central axis.

Regarding claim 29, Dybvig, as modified, does not disclose a blower housing substantially enclosing the fan, the blower housing defining an inlet and an outlet;

wherein the second non-rotating shroud is fixed to the blower housing.

Regarding claim 30, Dybvig, as modified, does not disclose a blower housing substantially enclosing the fan, the blower housing defining an inlet and an outlet; a motor housing coupled to the blower housing; and a motor supported in the motor housing and comprising a drive shaft drivingly connected to the hub of the centrifugal fan; further comprising a flange at least partially supporting the motor housing on the blower housing, wherein the second non-rotating shroud is integral with the flange.

However, Parisi et al. teaches of second non-rotating shroud (36) in a closely-spaced, facing relationship with at least a portion of the respective second side edges of the plurality of blades and shaped to follow at least a portion of a contour of the respective second side edges of the plurality of blades, the second non-rotating shroud positioned coaxial with the hub (figure 3);

a blower housing (28) substantially enclosing the fan (10), the blower housing defining an inlet (direction of arrow 10) and an outlet (col. 3 lines 31-41); a motor housing (generally 38) coupled to the blower housing; and a motor (30) supported in the motor housing and comprising a drive shaft (32) drivingly connected to the hub (12) of the centrifugal fan; further comprising a flange at least partially supporting the motor housing on the blower housing (38), wherein the second non-rotating shroud (36) is integral with the flange.

Since Parisi et al. and Dybvig are from the same field of endeavor centrifugal fluid movement, the casing of Parisi et al. would have been recognized in the pertinent art of Dybvig.

It would have been obvious at the time the invention was made to one of ordinary skill in the art to incorporate the housing of Parisi et al. around the centrifugal fluid movement device of Dybvig in order to move the pressurized air radially outwardly (col. 3 lines 39-40).

Allowable Subject Matter

Claims 25 and 27 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Claims 31-32 are objected to as being dependent upon a rejected base claim, but would be allowable if: rewritten in independent form including all of the limitations of the base claim and any intervening claims and rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Claims 33 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.


Claim 34 is allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Devin Hanan whose telephone number is 571-272-6089. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look can be reached on 571-272-4820. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Devin Hanan
Patent Examiner
Art Unit 3745



EDWARD K. LOOK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700

5/2/05